



Tanta University
Faculty of Engineering
Electrical Power and Machines Engineering Department
Electrical machine 2……. 2014/2015

Sheet (5)

1. Two 100-kVA, single-phase transformers are connected in parallel both on the primary and secondary. One transformer has an ohmic drop of 0.5% at full-load and an inductive drop of 8% at full-load current. The other has an ohmic drop of 0.75% and inductive drop of 2%. Show how will they share a load of 180 kW at 0.9lead power factor.

2. Two 2,200/110-V, transformers are operated in parallel to share a load of 125 kVA at 0.8 power factor lagging. Transformers are rated as below :

   A : 100 kVA ; 0.9% resistance and 10% reactance
   B : 50 kVA ; 1.0% resistance and 5% reactance
   Find the load carried by each transformers.

3. Two single-phase transformers A and B of equal voltage ratio are running in parallel and supply a load of 1000 A at 0.8 p.f. lag. The equivalent impedances of the two transformers are (2 + j3) and (2.5 + j5) ohms respectively. Calculate the current supplied by each transformer and the ratio of the kW output of the two transformers.

4. Two 1-φ transformers are connected in parallel at no-load. One has a turn ratio of 5,000/440 and a rating of 200 kVA, the other has a ratio of 5,000/480 and a rating of 350 kVA. The leakage reactance of each is 3.5%. What is the no-load circulation current expressed as a percentage of the nominal current of the 200 kVA transformer.

5. Two 1-φ transformers, one of 100 kVA and the other of 50 kVA are connected in parallel to the same bus-bars on the primary side, their no-load secondary voltages being 1000 V and 950 V respectively. Their resistances are 2.0 and 2.5 per cent respectively and their reactances 8 and 6 percent respectively. Calculate no-load circulating current in the secondaries.

6. Two transformers A and B of ratings 500 kVA and 250 kVA are supplying a load of (0.17+0.13i)Ω.Their open-circuit voltages are 405V and 415 V respectively. Transformer A has 1% resistance and 5% reactance and transformer B has 1.5% resistance and 4% reactance. Find (a) cross-current in the secondaries on no-load and (b) the load shared by each transformer.